11. NIGHTCAP VILLAGE EARTHWORKS MANAGEMENT PLAN

Cardno - 2006

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Engineering the Future

Nightcap Urban Village

Earthworks Management Plan

28 June 2006
Job No. 3500/53

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NIGHTCAP URBAN VILLAGE
EARTHWORKS MANAGEMENT PLAN

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EXECUTIVE SUMMARY

This Earthworks Management Plan (EMP) has been prepared on behalf of Peter Van Lieshout for submission with an application for development of Lot 3 on DP771335 and Lot 121 on DP134446 located on the Uki-Kyogle Road, Kunghur, New South Wales.

Management measures are proposed to prevent release of soil and other pollutants from entering stormwater drains or waterways and to mitigate environmental impacts that may occur as a result of erosion and sedimentation during site development. The development is designed to respond to the natural landform and drainage system and prevents significant alteration of existing site characteristics.

Erosion and sediment control measures will be installed prior to earthworks or site disturbance. Control measures will be maintained and repaired as required in accordance with this Earthworks Management Plan to maintain optimum performance throughout construction.

This Earthworks Management Plan has been prepared in accordance with the *Tweed Shire Council Sediment and Erosion Control Guidelines for Builders and Developers* which specifies best practice control measures to be established to minimise surface disturbance and to maintain stability during site development.

This EMP was developed to ensure compliance with the requirements of the *Environmental Planning and Assessment Act 1979* and the provisions of the *Tweed Local Environment Plan 2000* and the *Tweed Shire Council Development Control Plan No. 16 Subdivision Manual.*

1. INTRODUCTION

This Earthworks Management Plan provides erosion and sediment control measures to be implemented during construction of the Nightcap Urban Village at 2954 Kyogle Road, Khungur New South Wales. The site is located 12km southwest of Uki in the Nightcap Ranges and comprises Lot 3 on DP771335 and Lot 121 on DP134446. The site locality is presented in Figure 1.

This Earthworks Management Plan has been developed to prevent the contamination of stormwater and receiving waterways through sediment translocation, as a result of erosion that may occur during earthworks.

2. SITE DESCRIPTION

The proposed Nightcap Village development will involve construction of urban residential and village residential lots including medium density and high density residential precincts. A mixed use precinct will be established in the centre of the site and commercial and health facilities will also be provided. Open space areas will include sports fields, a market garden and village green and general open space areas along the Tweed River.

The site is predominantly cleared of vegetation with scattered trees in the centre area of the site. The dominant vegetation type is flooded gum open forest which forms in sheltered moist locations such as valley floors along watercourses. The boundary of the site has a higher level of remnant riparian vegetation that is associated with the creek lines and the Tweed River.

The neighbouring area to the west of the site is densely vegetated with tall wood forests and wet sclerophyll forests. An area to the northwest of the site is currently leased for revegetation purposes and is also utilised as a camping ground for school groups.

Riparian vegetation and isolated vegetation stands will be retained within the development. Rehabilitation of degraded vegetation in riparian areas of the Tweed River will be undertaken to improve site ecological values and enhance amenity of open space areas. Figure 2 presents the proposed plan of development.

Slopes range from less than 5% to 40-50% with elevations ranging from 70m to 115m AHD as shown on Figures 3 and 4. The development site drains to the northeast through a series of creeks. Byrrill Creek is at the western end of the site, Kunghurloo Creek traverses the centre of the site and the Tweed River traverses the southern portion of the site. Two dams will be constructed within this drainage system as indicated on Figure 2.

3. EARTHWORKS MANAGEMENT

Erosion and sediment control measures shall be installed prior to earthworks or site disturbance. Control measures shall be maintained and repaired as required in accordance with this Earthworks Management Plan to maintain optimum performance throughout construction.

This Earthworks Management Plan has been prepared in accordance with the *Tweed Shire Council Sediment and Erosion Control Guidelines for Builders and Developers* which specifies best practice control measures to be established to minimise surface disturbance and to maintain stability during site development.

3.1 Terminology

The term **Developer** refers to Peter Van Lieshout.

The term **Consultant** refers to the civil and/or environmental engineering consultant employed by the Developer.

The term **Site Manager** refers to the person appointed by the Developer to control on-site operations.

The term **Contractor** refers to the party or company performing construction works relating to the proposed development and includes all employees of the Contractor and sub-contractors.

The term **Works** refers to all matters associated with the construction of the proposed development.

The term **Council** refers to Tweed Shire Council.

The term **NSW EPA** refers to the New South Wales Environmental Protection Authority (Department of Environment & Conservation).

The term **EMP** refers to this Earthworks Management Plan.

3.2 Responsibility

The Site Manager shall be responsible for ensuring that all earthworks are conducted in accordance with this EMP.

The Contractor shall be responsible for ensuring all contractors and sub-contractors are adequately trained in environmental management procedures required by this EMP.

The Contractor shall be responsible for directing site activities and report non-compliance with this EMP to the Site Manager.

3.3 Non-Compliance with the EMP and Corrective Action Requirements

The Contractor shall assume responsibility for implementation of this EMP. Where the Contractor becomes aware of a site or operational condition that does not comply with stated performance indicators of this EMP, there is a requirement for corrective action.

A Corrective Action Request (CAR) form is to be completed and authorised in general compliance with the example CAR form provided in Appendix A of this EMP. The Contractor is also required to maintain a register of CARs, which shall demonstrate that appropriate actions have been completed within a suitable timeframe.

Any CAR registered in accordance with this EMP shall be provided to the Developer, any State or Commonwealth Government Department, any statutory authority or other person, consensually or as lawfully required.

In some instances, further investigation or monitoring may be required to establish whether the Contractor has failed to adequately implement the EMP, or has failed to comply with relevant legislation, guidelines and statutes. In these instances, an independent party such as the Consultant shall carry out the investigation or monitoring. If it is established that the cause for non-compliance with the stated performance indicator(s) has arisen from the Contractor's actions or omissions, then the costs of the monitoring shall be deducted from payments to the Contractor and paid to the Consultant, otherwise the costs of the monitoring shall be obtained from the Developer and paid to the Consultant.

3.4 Legislative and Policy Framework

The following legislation and policies will apply to implementation of environmental management measures under this EMP.

- *Environmental Planning and Assessment Act 1979*
- *Tweed Shire Council Development Control Plan No. 16*
- *Tweed Local Environment Plan 2000*

The *Environmental Planning and Assessment Act 1979* (EPA Act) controls the planning and assessment of land development in New South Wales. The EPA Act encourages the "management, development and conservation of natural and artificial resources" while promoting the "orderly and economic use and development of land".

The *Tweed Local Environment Plan 2000* has been prepared in accordance with the EPA Act and provides a legal basis for preparation of development control plans which contain provisions for land development within the Shire. The *Tweed Shire Council Development Control Plan No. 16 Subdivision Manual* (DCP16). DCP16 outlines Council's objectives for land development and provides guidelines and development standards for new subdivisions.

This EMP was developed in accordance with the provisions of the Tweed Local Environment Plan 2000 and DCP16. The development responds to the natural landform and drainage system and prevents significant alteration of existing site characteristics in accordance with the requirements of DCP16.

3.5 Objectives

Earthworks undertaken during site development may result in environmental impacts due to vegetation removal and soil disturbance. The objectives of this Earthworks Management Plan is to reduce the potential impacts associated with erosion and sedimentation during earthworks to prevent site destabilisation and to protect the water quality of receiving waterways.

Erosion and sediment control measures shall be provided on the site in accordance with the Tweed Shire Council Development Control Code No. 16 and the *Development and Design Specification D7 – Stormwater Quality and its Annexure A – Code of Practice for Soil and Water Management on Construction Works.*

3.6 Performance Indicators

The Contractor shall ensure that any waters being discharged from the construction site comply with the following water quality characteristics or demonstrate that there is no worsening of existing conditions as determined by baseline water quality monitoring.

Water Quality Parameter	Release Limit
Suspended Solids*	<50 mg/L
pH	4.0 to 7.0
Dissolved Oxygen	> 6mg/L
Hydrocarbons	No visible sheen
Litter	No visible litter
Total Nitrogen	0.3 mg/L
Total Phosphorous	0.03 mg/L

3.7 Design Considerations

The development design has considered the existing topography of the site and minimises earthworks by integrating structures with the landform, where possible, to reduce the risk of environmental impacts. Development works are proposed to be staged to limit the extent of exposed areas at any one time during construction.

3.8 Stabilised Site Access Point

The site shall have a stabilised entry/exit point so that access for construction vehicles and equipment is limited to a single control point. This area shall include a shakedown area and wheel wash to prevent soil-tracking onto external roads. The entry crossing shall be stabilized with geotextile fabric and blue-metal to allow all-weather access.

3.9 Earthworks Actions/Tasks

Erosion and sediment control measures shall be implemented by the Contractor during earthworks/construction. Such measures shall include, but should not be limited to, the following.

- All erosion and sediment control devices shall be installed prior to commencement of construction activities including vegetation removal and cutting and filling.
- Erosion and sediment control devices including sediment traps, sediment retention ponds and any stormwater diversion structures shall be installed to prevent sediments from leaving the site or entering downstream environments.
- Diversion banks or channels shall be installed to direct uncontaminated upslope runoff around the works areas. These drains shall be terminated at silt traps and may require erosion control measures depending on the flow velocity.
- Vegetation clearing shall be undertaken in stages to minimise soil erosion. Topsoil removed during vegetation removal shall be stockpiled at heights of no more than 1.5m and located within designated storage areas. Stockpiled topsoil shall be used in revegetation following completion of earthworks.
- All stockpiles shall be stabilised and sediment fences installed on downhill slopes to prevent mobilisation of stockpile materials into waterways. Grassed areas should be maintained downslope of sediment fences to trap excess materials.
- Any exposed areas within the site shall be contained within erosion and sediment controls.
- When excavating for services installation, trenches shall be left open for a minimum practical time.
- In instances that trenches require pumping dry for pipe installation, the pumped water shall be filtered through a grass buffer or a suitable silt trap prior to discharge.
- All erosion and sediment control measures shall be inspected on a daily basis and immediately following rain to verify optimum performance. Any necessary repairs shall be made immediately.
- Failures in erosion and sediment control devices shall be immediately reported to the Site Manager so that procedures may be revised where necessary.
- Sediment and erosion controls shall only be removed at the completion of earthworks after all surfaces have been stabilised.
- Roads and pavements shall be swept, not hosed as required to prevent entry of soils to stormwater drains or gutters. Sediment controls shall be placed around stormwater drains as a precaution.

3.10 Revegetation / Site Stabilisation

Following construction works, revegetation shall be undertaken by the Contractor as soon as practicable to stabilise exposed areas. Vegetation stabilisation at the development site shall include, but should not be limited to, the following.

- Soil coverage shall be maximised through vegetation cover. This may be achieved through planting of grass, laying gravel, employing an erosion control blanket or matting.
- Buffer areas of vegetation cover to be maintained to the highest level practicable, this is particularly important in areas adjacent to drainage lines. These buffer areas should be fenced to minimise disturbance.
- Down slope vegetation to be maintained as a secondary filtration device for stormwater runoff.
- Landscaping to be undertaken to rehabilitate the disturbed areas within the site. Mulching of open garden beds of the landscaped areas will minimise water losses.
- Following the forming of land, permanent or temporary vegetative stabilisation should be undertaken this may be through utilisation of straw mulch, seeding and planting of flora in all disturbed areas following construction

3.11 Monitoring Requirements

The Contractor shall visually inspect all sediment and erosion controls on a daily basis and following rain and undertake repairs or maintenance where necessary.

The Contractor shall visually inspect the integrity of stockpiles on a daily basis and following rain.

The Contractor shall inspect all stormwater drains daily and following rain to ensure they are free of debris.

The Contractor shall remove all uncontaminated material from sediment and erosion control devices on a fortnightly basis and following rain. Uncontaminated material shall be returned to a secure stockpile area.

The Contractor shall undertake water quality monitoring in accordance with the Environmental Management Plan prepared for the site.

3.12 Corrective Actions

Should there be non-compliance with the stated performance indicators, the following corrective actions are to be implemented.

- The Contractor shall identify the cause of the non-compliance.
- The Contractor shall implement appropriate mitigation measures as determined by the Developer and Consultant in consultation with the Site Manager.
- The Contractor shall undertake validation monitoring to confirm that the nominated corrective actions have been effective.
- The Contractor shall implement the corrective action(s) as required within the agreed time frame noted on the Corrective Action Request.

FIGURES

Figure 1 **Locality Plan**

Figure 2 **Proposed Plan of Development**

Figure 3 **Slope Analysis**

Figure 4 **Contour Survey**

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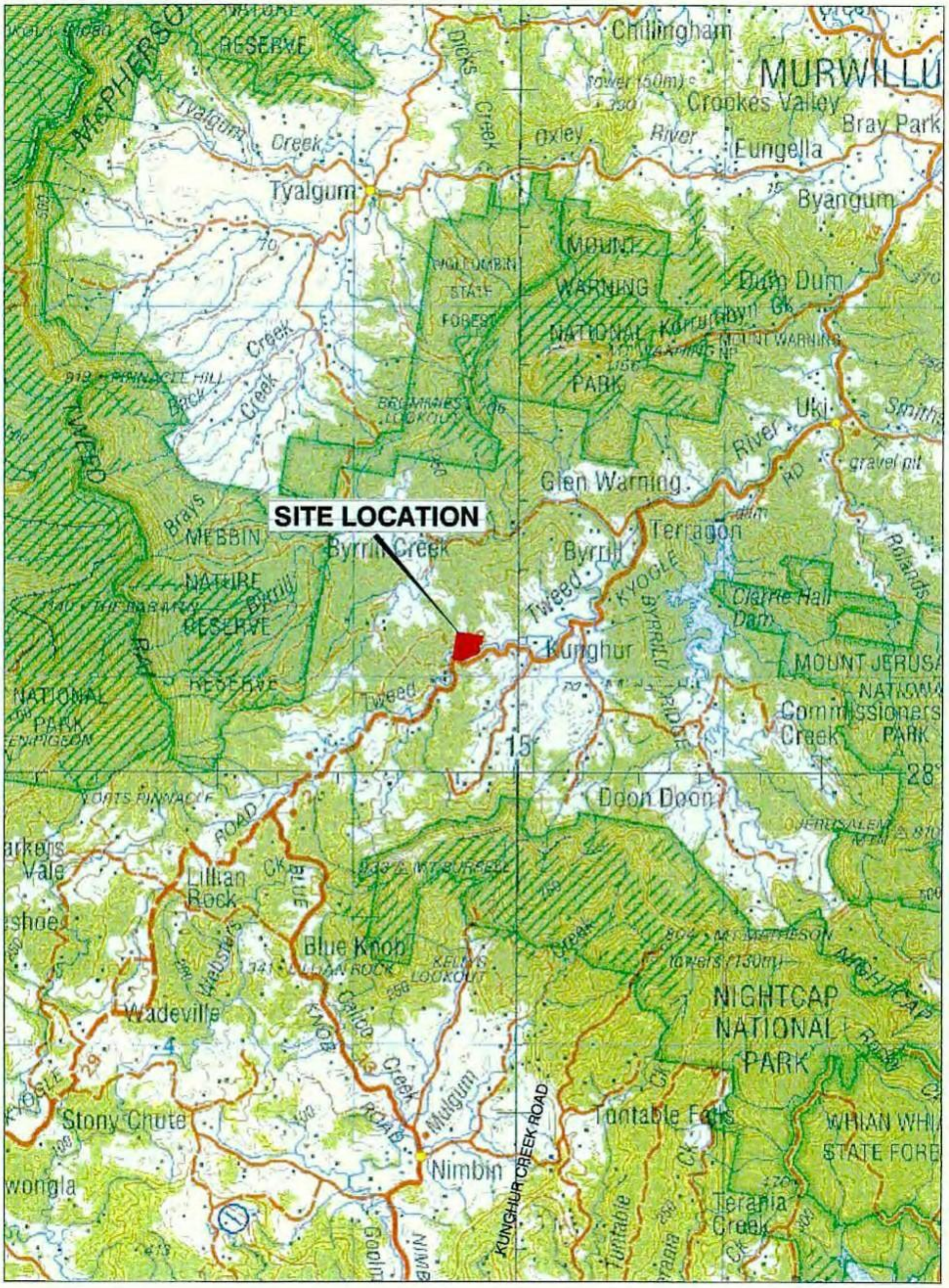

1.5 0 1.5 3.0 4.5 6.0 7.5km
1:150,000

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Rev: Orig. Date: 22 June 2006

Peter Van Lieshout

CAD FILE: I:\3500-53\ACAD\Earthworks Management Plan\Figure 1 - Locality Plan.dwg
XREF's: xr-Cadastre_study_area MGA94, xr-NSW Topo Maps

FIGURE 1
LOCALITY PLAN

Project No.: 3500/53

PRINT DATE: 22 June, 2006 - 1:51pm

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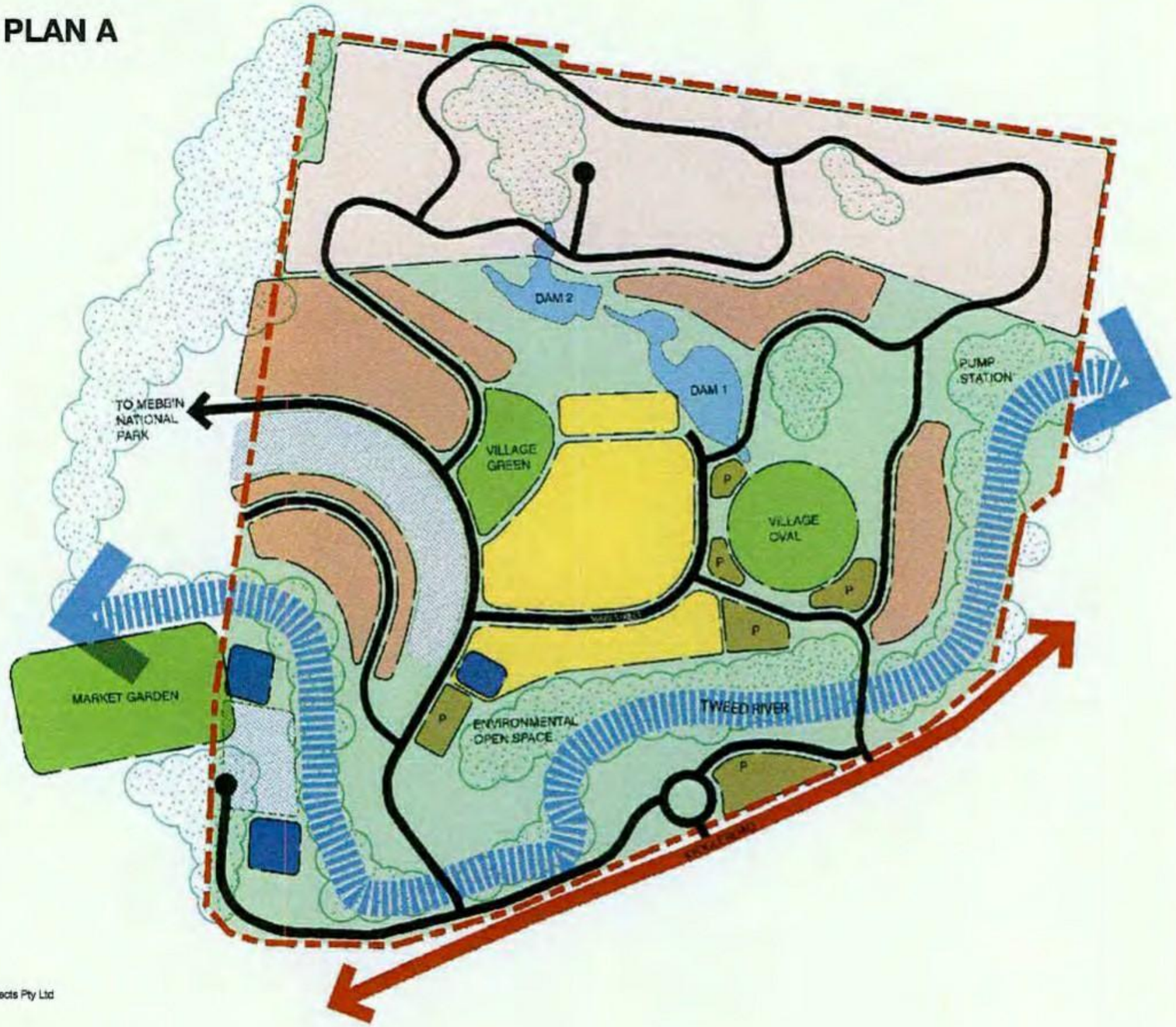
CONCEPT PLAN A



LEGEND

- VILLAGE LOTS
- VILLAGE HOUSING
- URBAN VILLAGE
- TOURISM AND RECREATIONAL LOTS
- OPEN SPACE (Village Green, Sports Display, Market Gardens
- ENVIRONMENTAL OPEN SPACE
- REHABILITATION AREA
- P PARKING
- SITE BOUNDARY
- RIVER CORRIDOR

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CAD FILE: I:\3500-53\ACAD\Earthworks Management Plan\Figure 2 - Proposed Plan of Development.dwg
XREFs:

Scale N.T.S

FIGURE 2

PROPOSED PLAN OF DEVELOPMENT

Project No.: 3500/53

PRINT DATE: 29 June, 2006 - 11:44 am

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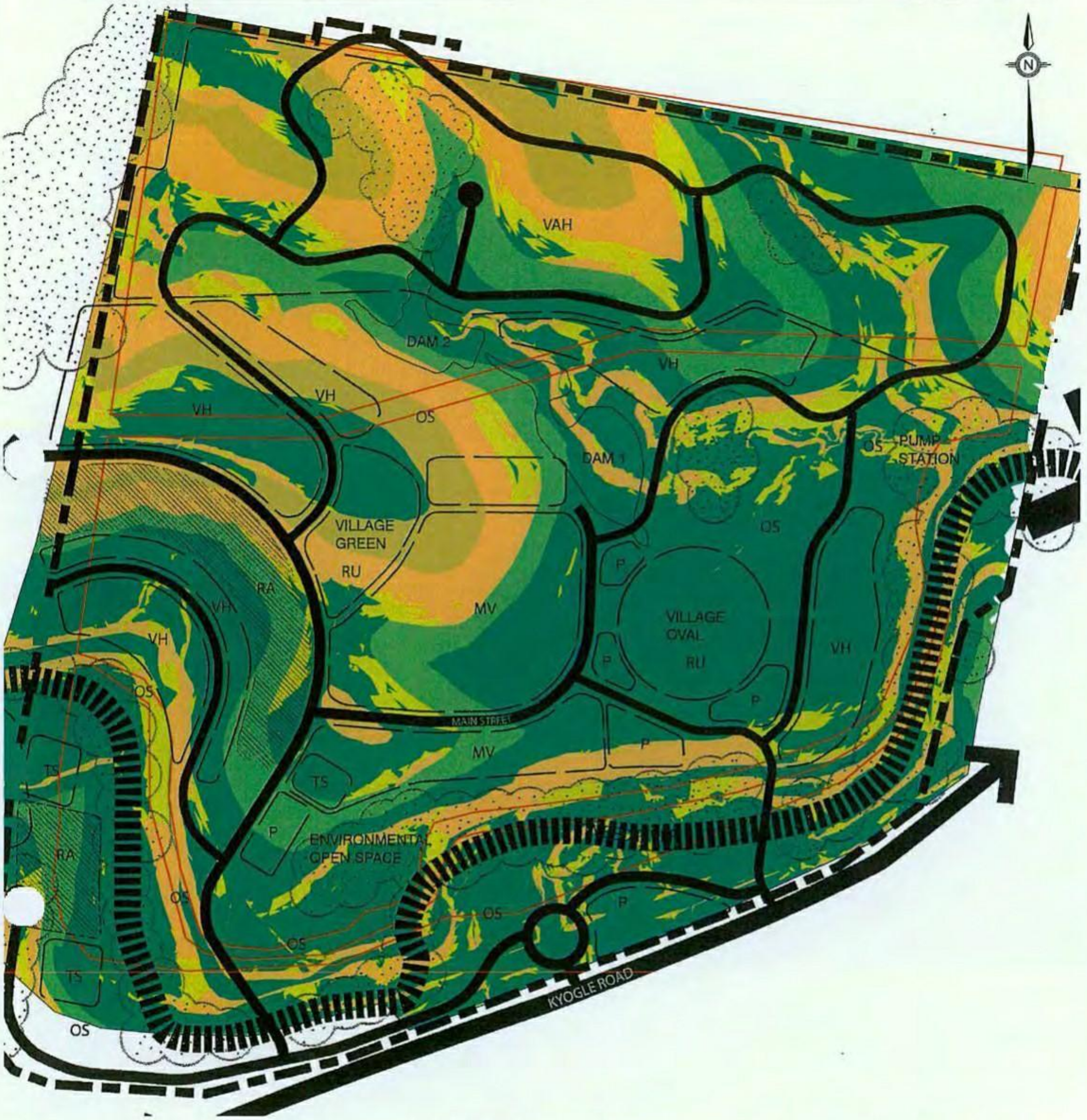

VAH	VILLAGE LOTS	12.28 Ha
VH	VILLAGE HOUSING	4.94 Ha
MV	MIXED VILLAGE	3.75 Ha
TS	TOURISM AND SPECIAL USES	0.51 Ha
RU	RECREATIONAL USE	1.73 Ha
OS	OPEN SPACE	16.80 Ha
RA	REHABILITATION AREA	2.03 Ha
	ROAD AREA	4.92 Ha
P	PARKING	1.20 Ha
	TOTAL SITE AREA	48.16 Ha

30 0 30 60 90 120 150m
1:3000

Proportion %	
0 – 16.67	53.2
16.67 – 25	24.4
25 – 100	22.4

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Rev: Orig. Date: 21 July 2006

Peter Van Lieshout

CAD FILE: I:\3500-53\ACAD\Earthworks Management Plan\Figure 3 - Slope Analysis.dwg
XREF's:

Scale 1:3000 (A3)

FIGURE 3

SLOPE ANALYSIS

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30 0 30 60 90 120 150m
1:3000

Scale 1:3000 (A3)

FIGURE 4
CONTOUR SURVEY

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Peter Van Lieshout

CAD FILE: N:\3500-53\ACAD\Earthworks Management Plan\Figure 4 - Contour Survey.dwg
XREFs: xr-Aerial Ortho QASCO; xr-Contours QASCO; xr-Survey QASCO

PRINT DATE: 21 July, 2006 - 3:01pm

APPENDIX A

Corrective Action Request Form

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CORRECTIVE ACTION REQUEST

Report No: _____

Date: _____

DETAILS OF NON-CONFORMANCE:

Inspected by:

DETAILS OF PROPOSED ACTION

Passed to Developer (as applicable):y/n Date:
Reply required by:

CONSULTANT/DEVELOPER ADVICE (as required):

Date action required by (if applicable):
Signed (by Developer or Developer's representative): Date:

AUTHORITY TO PROCEED

Sign: Date:

ACTION CARRIED OUT

Sign: Date:

ELEMENT RE-INSPECTED BY

Sign: Date:

COPY ISSUED TO DEVELOPER Date:

Sign: